IMPORTANT: READ PAGE 18

THE JOURNAL OF THE SOUTH CAROLINA MEDICAL ASSOCIATION

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Medical College of the State of South Carolina, Charleston, S. C.

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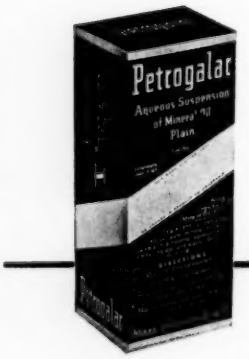

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Some Historical Aspects of the Medical College of the State of South Carolina

ROBERT WILSON, M.D., DEAN
CHARLESTON, S. C.

There have been at various times three medical colleges in South Carolina. In 1824, organized under the auspices of the Medical Society of South Carolina, the Medical College of South Carolina began its career. Eight years later the Medical College of the State of South Carolina was chartered, and in 1867 the School of Medicine of the University of South Carolina was established. The latter school was short lived. Two years after its establishment the University was opened to both races and most of the faculty resigned.

The Medical College of South Carolina soon acquired a wide reputation due to the brilliant men who composed its faculty, and the classes increased rapidly. The five graduates of 1824 grew to 48 in 1831. At this time, however, the smoldering jealousies between the Medical Society and the college burst into active flame over the election of a successor to Dr. James Ramsay, the professor of surgery, who had resigned his chair. Unable to effect an agreement, the faculty withdrew in a body and established themselves in the old theatre at the corner of Broad and New Streets under the name of the Medical College of the State of South Carolina. The two medical schools continued in operation as separate institutions until 1839 when the Medical College of South Carolina, having failed to attract students in sufficient numbers to justify its further existence, merged with the Medical College of the State of South Carolina, and the old faculty reoccupied their original quarters on Queen Street, the two faculties "again united in the bonds of peace and amity, and in prosecution of their common interests, usefulness and dignity."

From this time until the outbreak of the War Between the States the college enjoyed continued prosperity and increasing reputation. Some of the faculty had acquired continental and intercontinental distinction in medicine and in other branches of science. Holbrook and Moultrie and Elliott; Dickson and Frost; Prioleau and Ravenel; Agassiz, who after two years was called to Harvard; Geddings and Miles and Chisolm and Shepard; these are among the men who placed the college in the front rank of American medical schools. Moultrie, with his breadth of vision, as early as 1836 urged upon the college the course which has been followed in recent years under the guidance of the Council on Medical Education and Hospitals of the American Medical Association. He pointed out the need of adequate premedical training broad-based upon a classical education and a four year graded course of medical study in accordance with the procedure in the European medical schools.

It is worthy of note that in 1840 the faculty converted the theatre in which their teaching had been conducted into a hospital in order to secure facilities for bedside clinical instruction. The News & Courier called attention to this on September 3, 1840, saying:

"College Hospital, West end of Broad Street, (formerly the old Theatre) has been instituted by the Faculty of the Medical College, for the purpose of furnishing instruction at the bedsides of the sick, for Medical Students and the Annual Classes. It is now opened for the reception of patients, white and black, and those laboring under madness in its various forms. A ward for females, or an obstetrics ward is also established. Those selecting this asylum, may be assured of the utmost care in nursing and medical attendance. The wards are spacious and airy, and the location healthy and retired.

The medical department will be under the care of Dr. Frost.

The surgical under Dr. Geddings.

The obstetrics under Dr. Prioleau."

"This is one of the earliest, if not the earliest, instance in which a faculty of a medical college established a teaching hospital instead of the reverse, which is the more usual situation." (Dr. W. C. Davison).

Notwithstanding the exhaustion and poverty which followed the War Between the States, the college was reorganized and operated successfully. When reopened there were only five matriculants, but with indomitable will the faculty persevered, offering medical instruction free of charge on account of the poverty of the South.

Two efforts have been made to associate the college with the University of South Carolina, one in 1878, and again in 1911 under the presidency of Dr. S. C. Mitchell. Both of these attempts failed. Dr. Mitchell declined to accept the proposition of affiliation which was made. It was then decided to make an effort to induce the state to take over the college as a state institution. There was some objection on the part of older members of the faculty, but wiser counsel prevailed and the trustees accepted the advice. The success of this effort is well known. It was accomplished through the enthusiastic assistance of the whole profession of the state and the effective cooperation of Governor Blease. This occured in February, 1913, and a few weeks later a whirlwind campaign was set up in Charleston to raise money for the construction of a new building opposite the Roper Hospital, where it would be in juxtaposition to the clinical work. The campaign was a success and the building which was begun immediately was completed and occupied in the fall. There was some sentimental regret upon leaving the old building which had been the home of the college for more than three quarters of a century and whose amphitheatre, if walls could talk, might thrill us with tales of the eloquence of the brilliant coterie of men who formed the faculty in ante-bellum days, but regret was soon buried in pride in the new achievement which it was realized enabled the college to carry on its work much more successfully and efficiently.

The recent physical expansion made possible by alumni contributions, state appropriation, Federal assistance, and the generosity of a native son of South Carolina, Mr. Bernard M. Baruch, has provided ample and magnificent accomodations for the college activities of teaching and research. Entitled to special mention is the Alumni Memorial Clinic whose spacious quarters represent the fulfillment of a dream of many years and worthily commemorates the loyalty and devotion of the host of our alumni.

In the old days all teaching was carried on by practicing physicians and surgeons, but with the growth of medicine and the introduction of university ideals it has become necessary to employ instructors who devote their full time to teaching and research. It is recognized that research is an important function of a medical school and that teaching is much more effectively conducted in the atmosphere of original investigation. Furthermore the opportunities afforded for investigation impose upon the faculty an obligation to the public to use such opportunities for the advancement of medical knowledge. There are now twenty-nine full-time teachers upon the staff in addition to two teaching fellows, of whom five are employed in the clinical departments of medicine, surgery, obstetrics, and pediatrics. Important investigative work is being carried on in several departments, an account of which is given by Dr. J. I. Waring in this issue of The Journal.

The medical college has produced a long line of graduates who have occupied distinguished places in medicine. Some of its graduates also have attained distinction and made important contributions in other fields of science, notable among whom may be mentioned Dr. St. Julien Ravenel and Dr. J. Lawrence Smith.

Dr. Ravenel graduated in 1840, and after spending two years in further medical study in Paris returned to Charleston, but devoted himself to chemistry, especially to the field of agricultural chemistry. His discovery of the value of the phosphate deposits led to the development of the extensive industry which played so large a part in the rehabilitation of South Carolina after the War Between the States. Of especial interest at the present time was his building of the torpedo boat Little David in 1863, which associates him with the initiation of undersea warfare which has changed the character of modern war.

Dr. Smith, a fellow classmate, began to practice of medicine in Charleston in 1844 and shortly thereafter established the Charleston Medical & Surgical Journal and lectured on toxicology in his Alma Mater. He soon gave up medical practice and devoted himself to other fields of scientific endeavor. His work in meteorology and the character of soils affecting the culture of cotton was of such importance that it led to his appointment by Secretary Buchanan on a mission to Turkey upon the request of the Turkish government for the purpose of teaching the proper method of cotton culture in Asia Minor. The Turkish government also gave him an appointment as mining engineer because of his valuable investigative work in mineralogy, which gave him a high rank among American men of science.

"Conscious of the heritage left by the men of medicine who during a century gave of their best for the upbuilding of the institution, the college authorities are striving to carry even higher and further its lustrous record.

"The Medical College is no local enterprise; it is the proud possession of the people of South Carolina. It was devised and is operated for the benefit of mankind and it has achieved wonderfully, at times in the face of very serious obstacles. It has been carried forward unceasingly and unselfishly through the loyal and practical devotion of the physicians and surgeons who from time to time have been entrusted with its welfare. In the Medical College, the State of South Carolina has an institution the standards of which are no less high than those in any other section of the scheme of education. Whatever the State gives to the Medical College is given to itself, to be increased many times." (The News & Courier, October 16, 1924).

NEWS ITEMS

Dr. Wilburn E. Saye has opened offices in the Physicians and Surgeons Building at 1515 Bull Street, Columbia, specializing in Neurology, Psychiatry, and Endocrinology. Dr. Saye was in the U. S. Navy two years, at the S. C. State Hospital three years, and with the Veteran's Administration sixteen years.

Dr. Percy D. Hay, Roentgenologist of Florence, received deserved publicity in the news papers recently for his invention of a new instrument, the Hay Roentgen Periscope, which is a great help to the roentgenologist in that it permits binocular vision of cavital or surface lesions during treatment. The instrument is manufactured by Picker Corporation.

Dr. Jennings K. Owens has recently established offices in Bennettsville.

Dr. Margaret Buckner has recently located at McColl.

Doctors Robert W. Leonard and C. H. Poole have opened offices in Spartanburg.

Believing that it is far wiser to be prepared than to be caught off guard the Board of Trustees of the State Hospital have made plans for air raid precautions, including bomb shelters, for the safety of the patients.

On December 13th, Dr. Robert B. Stith, Jr. of Florence, was married to Miss Finley Plunckett of Aiken, S. C.

Recent Activities at the Medical College

J. I. WARING, M.D.

During the last few months, the various departments of the College have been expanding into their new quarters and the new plant is in full operation, except in a few departments where the lack of materials has prevented furnishing the equipment. A call for physicians for the armed services of the country has depleted the staffs of several departments and the burden of work has consequently fallen back on fewer shoulders. Nevertheless, the teaching load is being fully carried and a considerable amount of investigative work is in progress.

Department of Medicine

Under the auspices of the Department of Medicine, there has been inaugurated a Monday afternoon Graduate Conference, at which members of the teaching staff discuss clinical and pathological questions. This is in addition to the usual Friday afternoon Pathological Conference, in which students and teachers participate. There is also a Saturday morning conference, at which cases from the hospital are presented to students and faculty. The College welcomes any physicians of the State, who might care to attend these meetings.

The Department of Medicine is continuing its study of the action of the sulfonamides in penumonia and is attempting to work out some of the problems of sickle cell anemia.

Department of Surgery

Members of the Surgical Department are now busily engaged in helping to build up a store of sterile supplies for emergency use. Large amounts of blood plasma and intravenous solutions will be prepared and stored in various depots. Unneeded glassware is being requisitioned from all departments for this purpose. Separation of plasma and some of the storage will be in the College buildings.

Research activities are continuing. A study on "The Effects of Excessively Hot Laparatomy Pads in the Production of Peritoneal Adhesions" was published recently. A preliminary report on "Tissue Damage from Hot Injections" was presented at the American College of Surgeons' meeting in November. Some new work on "Supplying Collateral Blood Supply to the Brain in Cerebral Thrombosis" will be reported at the Southeastern Surgical Congress in March. Experimental studies on nerve injuries and on bronchial closure are also in progress.

Clinical Pathology

The recent development in the building program has added considerably to the space occupied and facilities of the laboratories of Clinical Pathology. This has been necessary, due to the expansion of the student body and the increase of laboratory work required these days for patients of the Hospital and Out-Patient Department.

During the past year, Dr. H. H. Walker of Memphis, Tenn. and Dr. John H. Murdoch of Charleston, S. C., have been added as assistants to the laboratory staff, as well as several technicians. Unfortunately, we have had to relinquish Dr. Walker to the Medical Department of the U. S. Navy and, so far, his position at the College is unfilled.

Commencing the first of July, the Medical College has taken over the training of laboratory technicians, as there is a large demand for well-trained technicians for public and private medical laboratories throughout the country. Requirements for admission for this course are about the same as those for admission of medical students. The course covers a period of eighteen months, including technical laboratory training in Clinical Pathology, Bacteriology, Histopathology, Radiology and Electrocardiography, Biochemistry, and Serology. Information and application for taking this course should be sent to Dr. Francis B. Johnson, Director of Training School for Laboratory Technicians.

Department of Pathology

Two positions authorized in the Department of Pathology are now vacant on account of the medico-military emergency.

The department is now expanding into the new construction, which will adequately pro-

vide teaching, technical and private laboratories for all essential purposes. On account of scarcity of materials and fixtures, it will probably be some time before full equipment of all of the teaching rooms can be completed.

In addition to the regular courses of instruction, the department offers one of the best pathology training services, with a large and varied autopsy and surgical pathology experience.

To the present, the publications of the staff number more than one hundred papers and two books, while four medals for research work have been awarded it.

Research is considered a function of first importance and several problems are currently under investigation, including questions in pulmonary dust diseases, chronic mastitis, and lymphoid reactions in cancer.

Department of Anatomy

The freshman class has been increased by six, giving a total enrollment of fifty students for the Department of Anatomy. The new quarters include refrigerated storage for cadavers and a fluorescent lighting system in the gross dissection laboratory. Neurologic investigative work on the hypothalamus, pons and pyramidal tract is being carried out by the members of the department. A grant from the Council of Scientific Research of the American Medical Association has been received and is being used for further investigation of the pyramidal system. G. L. Rasmussen, instructor in Anatomy, recently received his Ph.D. from the University of Minnesota.

Department of Pharmacology and Materia Medica

In addition to its usual teaching, the Pharmacology Department is engaged in several activities:

Dr. Zeigler is studying the toxic effects of the oxalates.

Dr. Stoneburg and Dr. Martin are engaged in an investigation on the chemical character of an oil obtained from the fruits of Melia Azedarach L. (the China berry) and also the physiological effects of that oil. Dr. Martin is also investigating the chemical constituents of the seeds of Erythrina herbacea L., which have been reported to possess a curarelike action, and is preparing a paper on the poisonous plants of the vicinity of Charleston.

Dr. Hoch is studying the possibilities of the local production of essential drugs and making a survey of native drug resources of the state for the National Defense Council. He is also working on the isolation and study of pharmacologically active derivatives of indigenous flora.

Dr. Prout in collaboration with Dr. Harris of the Bacteriology Department has just completed a study of silica gel in ointment bases, which will appear in the next Journal of the American Pharmaceutical Association. Their next project is the study of Bentonite as an ointment base.

Obstetrics

The Obstetrical Department handled in 1939 a total of 1766 births, 823 on the in-patient service and 943 on the out-patient service.

In 1940, there were a total of 1812 births, 879 on the in-patient service and 933 on the out-patient service.

Births during 1941, it appears now, will run well over 2000.

The loss of two Residents to the service is keeping the rest of the staff very busy and has increased the clinical work of the students considerably.

Eclampsia, of which there have been about 20 cases a year in the past, does not appear now to be increasing, although the county prenatal clinics show an increase in patients with a definite shortage of professional personnel. The department also handled about 60 cases of severe, pre-eclamptic toxemia a year.

Department of Physiology

For the last two years, because of the illness of Mr. Richardson, the department has been unable to do a great amount of research work. Still, one paper this year, and last year two papers, were published. In November, Dr. Wager came to take the place of Mr. Richardson, who resigned the first of the year, and after Christmas the department, we thrust, will have time for continuing research already begun, and a new line of investigation already planned.

Dr. Kinard will continue his investigation of "The Suitability of Tungsten as an X-ray

Contrast Medium." This involves a consideration of the toxicity of tungsten metal and its salts, methods of administration, tracing of the routes of excretion, and storage in the reticuloendothelial system.

Dr. Wager is already preparing to institute research on "Etiotropic Drugs—Bacteriostatic," in an effort to find a satisfactory specific nontoxic bacteriostatic drug. As yet, no single agent has been found, which qualifies or even approaches the medical Utopia, or "Therapia Magna Sterilans." Sulfanilamide and its derivatives and modifications have enjoyed considerable success, but unfortunately, not without many qualifications.

The application of the principle of vinylogy offers an interesting research problem in an effort to sidestep the toxic actions. The results of preliminary investigation of efforts in this direction are not negative in character. Preliminary work offers such encouragement that continuance becomes almost obligatory.

The department lends itself in every possible way for cooperation with defense preparations. For example, it will assist, as opportunity offers, in establishing an increasing number of blood-banks in South Carolina hospitals and other centers. The services of every man in the department have been offered to the Government.

School of Nursing

To aid in the national emergency, fifteen additional students were admitted to the September class over the usual number. The class has responded well to making adjustments necessary to so large a group. It is expected that a very high percent of this group will be retained to be graduated. A large class is to be admitted in January, both to meet national needs and to serve the ever-increasing demands for nursing service in this country.

Records of bedside teaching have been kept for about three years. They show that each student receives no less than thirty hours of applied study at the bedside during her three-year course.

Students have been invited to several staff conferences with the graduate nurses when moving pictures, demonstrations and lectures of value have been available.

Twenty-one graduate nurses passed the November, 1941 State Board Examinations with very creditable ratings.

Accreditation—The school has applied for accreditation by the National League of Nursing Education Committee on Accreditation. It is anticipated that the study will be made early in January and that the school will be placed on the newly-made list of schools approved on a professional basis. This study is in no way to be confused with the state accreditation, which entitles students to become registered nurses.

To insure the graduate staff the privilege of keeping up to date on all current events with nursing implication, a conference is held three times a month. The needs of student nurses are stressed.

A Refresher Course for graduate inactive nurses is being given. These women are spending six weeks both in class and on the wards to be thoroughly familiar with Roper Hospital methods, so that in case of war emergency, patients may receive the best possible care.

A course is given to W. P. A. Workers, who wish to serve as trained attendants, in case of war emergency.

A course is given to N. Y. W. Workers, who wish to serve in case of war emergency.

The three courses are under the supervision of the Education Department and are especially adapted to the needs and ability of each person taking the classes.

Department of Bacteriology

Studies have been made on a satisfactory technique for delayed typing of pneumococci.

Encouraging studies are also in process in connection with the significance of the streptococci of the mouth in the production of dental cavities.

Dr. Harris has been working on the question of the production of an inexpensive satisfactory germicide which might be made available for use in obstetrics, and particularly for use by the midwives of the state. This investigation is being made at the request of the Committee on Maternal Welfare of the State Association.

Studies have also been made in the culturing of the dysentery and salmonella organisms.

Department of Nutrition

Several courses of instruction have been organized by the county workers, in connection with the State Commiittee on Nutrition. Work on the nutritional aspect of goiter in rats is being continued.

This department expects to have available very soon, an Evelyn Photo-Colorimeter, with which estimation of the vitamin content of foods and body fluids may be made.

Department of Chemistry

Members of this department have been working in conjunction with other departments on studies in sickle cell anemia, on tungsten and on silicosis. There has also been in progress for some time, a study of the fluorine content of water from various parts of the state.

Library

The Library has secured a moderate number of new books and has made a few changes in its general arrangement. Some cubicles have been built in the back portion of the Library, in order to afford privacy to the students. The Library will have the use of a portion of the wing of the new auditorium, which has not yet been completed, because of inability of the contractor to secure certain materials.

Cervical Arthritis

OLIN B. CHAMBERLAIN, M.D.
CHARLESTON, S. C.

The relation of degenerative and traumatic arthritis to pains in the head, neck and upper extremities has been receiving more attention the past few years. The nature and general characteristics of these pains indicate that they are of radicular origin, that is, they arise from irritation of the posterior spinal roots. For this reason they have a segmental type of distribution, unlike the neuritic types of pain with their distribution along the course of a peripheral nerve. Radicular pains are characteristically seen in neoplasms of the vertebrae and extradural growths. In these conditions their genesis is plain. Not so well recognized, however, has been the fact that arthritic changes in the vertebrae, or soft tissue lesions which precede the actual bony changes, may cause definite pain and parasthetic syndromes.

For a number of years various observers have called attention to this possibility. Von Bechterew and Strumpell, writing in Germany in 1893 and '97 respectively and Pierre Marie in France in 1898, first described the condition. However, the lack of X-ray limited their cases to far advanced ones. In America the first authoritative paper was by Percival Bailey and Louis Casamajor in 1911. It was entitled "Osteo arthritis of the spine as a cause of compression of the spinal cord and its roots." This paper dealt with the entire spine, and was interested mainly in severe and exaggerated cases, with the production of atrophies and paralyses.

During the past few years several clinicians have drawn attention to what is apparently a relatively neglected condition, namely syndromes arising from cervical arthritis. Some of the neglect has arisen from the fact that minimal arthritis of the spine is a very common finding in adults over forty, and for this reason many are prone to look rather skeptically upon syndromes which are blamed upon these frequently encountered changes. However, the present conception of the genesis of low back pain and sciatica rests squarely upon pathological changes in the lumbo-sacral-pelvic juncture. To quote Exume Walker in a recent resume, "The fundamental mechanisms producing the sciatic syndrome is mechanical compression of the lower lumbar or sacral spinal nerves within the spinal canal." He then proceeds to depict a number of pathological methods by which this compression can take place. Among these, of course, is the obvious compression which

(Read before S. C. Medical Association, Greenville, April, 1941.)

arises from osteo-arthritis causing pressure upon, or irritation of the nerve roots. In parallel argument, this paper attempts to point out that the compression and irritation phenomena arising in the cervical spinal roots from hypertrophic, degenerative, or traumatic arthritis will and does bring about syndromes of pain in the head, neck, and arms.

The pain produced by root irritation is spoken of as radicular pain and it has a somewhat segmental type of distribution. Syndromes arising from irritation of the cervical roots find distribution either on or in the head, as headache, and on the shoulders and arms where they are usually labelled neuritis and frequently attributed to lesions in the shoulder joint. Considering the radicular distribution of the first three cervical spinal nerves, one finds that the first cervical is, in its posterior or sensory branch often absent or very rudimentary, and it therefore can be omitted from consideration. The second and third cervical nerves are represented, in a sensory function, in the occipital region, extending up to the vertex. Irritation of these upper roots may be expected to produce headaches, mainly of an occipital type. It is believed by the writer that these headaches are of frequent occurrence in the middle-aged or osteo-arthritic group of patients. This subject has, as far as the usual text books go, been very much neglected, although indurative and rheumatic headaches are sometimes described in rather vague manner. More notice has been taken lately however. Hartsack, in the March 1940 number of the Medical Clinics of North America has drawn attention to headaches due to cervical arthritis. He comments upon the fact that they are so often faultily ascribed to other causes. I quote "In the osteoarthritic age group this form of headache ranks in frequency with ocular and migraine headaches." Headache which is characteristic of arthritis of the cervical spine is chronic in type. It may come on in sieges and last for days. It may be recurrent with considerable lapses in between. In many cases there is a definite daily periodicity, the headache waking the patient from sleep, or, milder, being present on awaking, and tending to grow less after arising. Since this particular characteristic is also found in hypertensive headaches, which are prone to occur in the same age group, many headaches in individuals with moderately increased vascular tension are labelled hypertensive when they should be more correctly ascribed to changes in the cervical spine. Perhaps, in all fairness the opposite may be true. The pain almost invariably begins in the occiput and tends to spread upward and forward. There is a marked tendency for the pain to finally become temporal and to seem to involve the eyeballs. We might pause from a description of the syndrome to hazard a reason for this pain in the temples and eyes. As pointed out earlier in this paper pain arising from irritation to the sensory roots of the second and third cervical nerves should be limited to the back of the head. However, recourse to neuro-anatomical texts will reveal the fact that the fifth cranial nerve, which as is well known supplies, in a sensory fashion the structures on the anterior aspect of the head, has an extraordinarily long sensory neucleus which runs down the brain stem into the upper cervical cord.

It seems logical to postulate therefore that the ocular and temporal pains which form a part of the type of headache under description, are referred pains, and explanable upon the same general theses upon which we explain arm pains in angina pectoris.

The individual suffering from an arthritic headache is quite cognizant of neckache. He often bends his neck back, or wants it rubbed. There is almost a characteristic gesture of bending the head back and stroking the neck with the palm of the hand, thereby securing temporary surcease of discomfort. The attachment of the neck muscles to the occiput seem particularly tender, and most patients have learned that heat and massage are helpful.

Exposure to drafts is often a precipitating factor in causing arthritic headaches. Sitting with the head in a stiffly upright position may play a part. Driving a car for long distances is a prolific source of trouble. If there is eye muscle error, or astigmatic error, the associated muscle-balance strain seems particularly prone to bring on a headache.

So much for a brief resume of some of the

salient points connected with headaches originating from irritation of the upper cervical nerve roots.

Let us now describe the clinical symptoms which may arise when the lower cervical roots are compressed or irritated. Consideration of the neuroanatomy involved will recall the fact that the radicular sensory distribution of the lower five cervical nerves is the neck, shoulders, and the upper extremities. (Graphic representation on the lantern slide makes this obvious.) Painful shoulders or aching and soreness on the outer side of the neck, and pain, aching, and stiffness up and down the back of the neck were described. Pain radiating down the outer side of the arms, often to the thumbs was part of the picture, and occasionally paresthesia in the fingers in the form of tingling and numbness was present. The cardinal symptoms were pain, aching and soreness. Three case histories are here introduced.

(1) Miss F., an artist of 55 years, presented herself with the complaint of "pain in neck and shoulders and arms." Pain had been present off and on for about a year: During the month before she came in, it had been much worse and was now causing her much discomfort. She felt that exertion or posture had much influence on the pain. It was not present at night, but began to appear about midday. She could get relief by lying down. The pains were of an aching type. They seemed to involve the shoulders and upper arms mainly, but extended down into the forearms, and at times into the hands. Both sides were involved. Manipulation of the arms and shoulders did not accentuate the pain. Except for the symptoms as enumerated, she was a healthy woman who worked steadily as a portrait painter.

Examination was essentially negative. Her cardio-vascular-renal system was in good condition. Neurological examination gave meagre findings. There were no atrophies nor abnormal kinetic phenomena in the upper extremities. Coordination was good. The tendon reflexes were physiological.

Sensory study revealed little. Over-extension and forced movements of the shoulder joints produced some pain. Tactile sensibility and the other modalities unimpaired. Among other laboratory studies, she was sent for an X-ray of the cervical and upper dorsal vertebrae. The report is as follows: "There is a definite narrowing of the intervertebral space between the fifth and sixth cervical vertebrae. There is also a slight forward displacement of the upper four cervical vertebrae on the fifth. There is beginning hypertrophic arthritis of these cervical vertebrae."

Impression: The evidence would indicate some previous injury to the cervical spine, with residual changes and hypertrophic arthritis."

Case No. 2. Mrs. D., a married woman of 40, was seen October, 1939. For two months she had been having painful and unusual sensations in the left hand and forearm. There was a feeling of numbness, along with loss of strength. At times there was an aching pain. These sensations came on at night, after she had slept a few hours. She would go to bed feeling quite well. Sometime during the night she would awake with the symptoms. If she arose and sat up in a chair they would leave her. This patient was of a rather tense, emotional type and there was obviously some panic associated with the syndrome. Inquiry into the past history brought out the interesting fact that about two years ago she had had a similar experience with the right hand. She had gone to several physicians who had made the diagnosis of neuritis. Various foci of infection had been removed. After some months the right hand had gradually gotten better and now it did not trouble her at all.

Examination was not very helpful. She was a rather stout woman with pendulous breasts and abdomen. Her blood pressure was 128/80 and her heart negative. Laboratory examinations were negative. Her metabolic rate was slightly low.

Neurological examination showed no atrophy nor tremors. There were no clear cut sensory changes. The hand "feels perfectly all right now but tonight when I wake up it will feel tingly and numb." X-ray report of the cervical spine: "Four views of the cervical spine and upper two or three dorsal vertebrae reveal a very definite hypertrophic arthritis of the lower cervical vertebrae. In addition, there is some evidence of calcification of the cartilages

between the articular facets of the third, fourth, fifth, and sixth cervical vertebrae."

Case No. 3. Mrs. R., 61 years of age, came in January 31, 1940, with a history of two years duration. She first noticed an aching sensation in the left shoulder. This had slowly progressed and the entire left arm was involved. The left hand felt numb and in particular the index finger. During the past month the right arm and hand were becoming involved. She had a great many headaches, particularly upon arising in the morning. This patient was of an emotional makeup and her subjective account was doubtless colored and exaggerated. Apparently several physicians had insisted that she was hysterical about herself and this had aroused her ire. Prior to the onset of her present symptoms she had been reasonably well, and attending to her household duties. It has always seemed to me a fairly safe rule to be unwilling to make a diagnosis of hysteria or functional nervous disorder when the symptoms appear for the first time relatively late in life.

Physical examination, as in the former cases, did not yield many helpful signs. This patient was tender along the cervical spines and head movements elicited pain. This sign was not found in the two cases formerly cited.

Neurological examination showed no atrophies nor tremors. No definite sensory changes could be elicited. She was sent to the X-ray department and reported upon as follows: "Two views of the cervical spine reveal a hypertrophic arthritis of moderate degree. Multiple views of the lower thoracic and lumbar spine reveal a beginning hypertrophic arthritis and rotatory scoliosis to the left."

A brief statement about the treatment of these cases is in order. Much can be done to improve the situation. Each case must be thoroughly studied and treated individually, of course, but there are certain generalizations which may be made.

Correction of muscle habits and strained positions, attention to visual defects and working postures is worthwhile.

Local physio-therapeutic measures—as massage—and various forms of heat should be used. In many cases the orthopedist may render valuable aid.

To combat the underlying hypertrophic arthritis, of which the cervical changes may be only a part, the best procedure is along the line of metabolic correction. Basal rates are frequently low—carbohydrate intake excessive. At times menopause may play a part.

Obvious foci of infection may be removed, but there are few clinicians who still regard degenerative arthritis as being caused by focal infection. Therefore most work in that particular direction is apt to be futile.

Finally the removal of the patient's dread that he has a tumor of the brain, or is about to become uremic, or have a stroke relaxes him considerably and doubtless acts as an efficient psycho-therapeutic aid.

DISCUSSION

DR. J. WARREN WHITE, GREENVILLE:

Mr. President, I am sorry there are not more physicians here to listen to this exposition and enjoy the scholarly way in which it was given. I was interested particularly in Dr. Chamberlain's anatomical explanation of the condition. There is one point on which I did not quite agree with him, and that is a quotation from Dr. Walker. He said he thought the trouble was within the spinal canal. It seems to me as though it were at the intervertebral foramina. That is where the calcifications develop—in the margins and upper portion of the foramina.

It is interesting to note the close analogy between this condition and sciatica. Dr. Dawson's paper, later on in this session, will take up the other end of the spine, and the two will work in very well together.

I am glad that Dr. Chamberlain did not stress the association of dental conditions with this form of arthritis. So often people come to a physician's office with most of their teeth removed and yet they are not any better. I am still of the opinion, as a good many of you know, that the teeth should be taken care of on their own account, more than for their effect on a remote part. Of course, if there is obvious sepsis there it should be taken care of, but I have seen very few cases which I thought were benefited by the removal of teeth.

The medicolegal aspect of this condition is interesting. These people are very vulnerable, and infinitesimally small trauma can cause damage and prolonged disability out of all proportion to the severity of the injury.

As to treatment, I think the most important part of it is rest, which is so important in all our cases, particularly of the arthritic type. Manipulative procedures, of course, have been done. Dr. Frederick

A. Jostes, of St. Louis, has done a good deal of that manner of treatment. I think it ought to be done only by a man who has had a good deal of experience with it.

These people frequently claim that they feel better when they are up and around. I think it is analogous to an inflamed eye. The more you rub it the better it feels, for a few minutes but only for these few minutes. So it is with the arthritis. To get up and walk around may relieve the sore neck for a while but the pain later returns to a greater degree. Rest is very important in this condition.

We should X-ray all these cases, to be sure there is no destructive lesion developing. Another thing about X-rays; don't be too concerned about their appearance. I often see roentgenograms of individuals with extreme changes involving the spine, yet living a perfectly normal existence, save for avoiding extremes of motion and excessive activity.

Here is the X-ray of another case (the lady is just coming in the hall now), in which there are relatively small osteoarthritic changes, yet she is most uncomfortable. This is a lady who has had cervical pain, with the referred arm pains, coming on without a trauma. The other day we put on this modified felt Thomas collar, simply fastening it around her neck, as you see here. She has felt a good deal of relief, so her daughter told me this morning over the telephone, since it has been worn. I hoped she would wear it this morning, but it does make her a little conspicuous, you see. The collar holds her quite satisfactorily and gives her the necessary protection and rest.

I just wanted to demonstrate that simple apparatus and emphasize the importance of rest. (Dr. White demonstrates a felt Thomas collar.) These people do hurt very severely. In spite of terrible X-rays they do improve and a hopeless prognosis is not justified.

DR. A. T. MOORE, COLUMBIA:

Gentlemen, like Dr. White, I am sorry there were not more here to have heard Dr. Chamberlain's very splendid paper.

I should like to emphasize just a few practical points in the treatment of arthritis of the cervical spine. I agree, of course, with everything that has been said previously, and this is just a matter of bringing out a few of the practical points.

The first point I wish to mention is prevention of deformity, which I think is very important. We see so many old cases come in with the neck bent far forward due to lack of proper support. The body has a natural inclination to go forward, and in any arthritis of the spine the forward curvature becomes worse. We should think of preventive treatment. It is too late after ankylosis has taken place. When deformity has occurred, muscle strain produces as much pain as the arthritis itself.

For local treatment frequently all that is necessary is a period of bed rest with possibly head traction. Not infrequently a plaster cast may have to be worn for a few weeks. The cast should support the occiput and chin and should extend down to and include the pelvis. Just a simple collar is not enough.

I was very glad Dr. White showed the collar support he devised for his case. It is easy to make, and it is surprising how much comfort it gives the patient and how much it relieves the pain. Recently Dr. White was in Columbia and we made one out of sponge rubber with an Ace bandage.

There are so many causes for arthritis that at times it may be necessary to have the services of men representing almost every branch of medicine. The points of treatment outstanding in my mind are rest, physical therapy and a high intake of the food accessories—especially vitamins A and D.

An extreme type of treatment may sometimes be necessary. That is operative treatment. I have a patient now who is having agonizing pain. He says he can stand pain but not agony. He has agonizing pain on every movement of the head day and night. Resection of the cervical nerves has been suggested by a neurologist. This operation exposes the spinal cord and is very extensive. When there is very slight motion and severe pain a bone grafting operation to immobilize the spine is not severely shocking and should give relief. For upper cervical involvement, the graft may be extended from the base of the skull to the cervical spine.

Again, I wish to congratulate Dr. Chamberlain on his very fine paper.

DR. CHAMBERLAIN, closing the discussion:

I wish to thank Dr. White and Dr. Moore for discussing my paper. I think the discussion by two orthopedic surgeons helps to enforce what I tried to point out, and that is that the proper time to treat these cases is in the incipiency. After they have progressed to considerate deformity and a degree of marked bony changes, about all one can do is to give rest and some kind of collar. When chronic headaches in the back of the head are recognized as being of arthritic origin we should begin treatment and not wait until the cases have reached the point of deformity. Therefore I think the problem lies squarely in the sphere of the internist; investigation work should be done early, and methods are available for correcting the situation before it gets too far along.

In regard to Dr. White's reference to Exum Walker's quotation, the quotation is accurate, but the comment is also accurate. I think the description should be widened to include the intervertebral foramina. That is the important point—that the cervical sensory roots, before they get out of the foramina and form nerves, may be pressed upon by various bony and soft tissue changes.

I thank you.

The Present Concept of Shock*

EDWARD F. PARKER, M.D.
CHARLESTON, S. C.

A comprehensive definition of shock or peripheral circulatory failure has not been yet agreed upon. Most of the definitions prior to the first World War stated that shock was a condition associated with low arterial blood pressure resulting from one cause or another, the stated cause depending on the theory of shock most prevalent at the time. In view of the present state of our knowledge concerning shock, probably the best definition is that of Minot and Blalock who defined shock as peripheral circulatory failure resulting from a discrepancy in the size of the vascular bed and the volume of intravascular fluid.

Various theories of a single cause of shock have gradually been discarded one by one. The more prominent were the vasomotor exhaustion theory of Crile, the acapnia theory of Henderson, the inhibition theory of Meltzer, the fat embolism theory of Porter, the acidosis theory of Cannon, and the traumatic toxemia theory of Cannon and Bayliss.

The traumatic toxemia theory of Cannon and Bayliss enjoyed great favor until recently. However, it has never been proven. The famous experiments which resulted in this theory were those in which one of the posterior extremities of anaesthetized cats was traumatized. After shock had resulted, the hind legs were amputated by symmetrical cuts across the upper thighs, and the differences in weight determined. The differences were not great enough to indicate that there was sufficient bleeding into the area to account for the fall in blood pressure. It so happened that histamine shock was being studied at that time. Hence, by comparing the shock produced by injecting histamine and the shock produced in these experiments by muscle trauma, it was assumed that the fall in blood pressure following trauma was due to the absorption of some depressant substance, which hypothetical substance was considered to be most likely histamine or some closely related substance.

As a matter of fact there is a great deal of evidence against the traumatic toxemia theory. Some of the evidences against it are the following:

If the venous and lymphatic outflow are prevented in a traumatized extremity with the arterial flow intact, shock results, thus presumably excluding the absorption of toxic products.

Blood from a dog in shock produced by muscle injury transfused to another in shock from loss of blood, resulted in a rise in blood pressure in the second animal with improvement in the shock.

Blood from the femoral vein of a traumatized extremity did not produce vasodilatation or a decline in blood pressure when transfused into a normal extremity of another animal.

Histamine injected in amounts necessary to produce shock is detectable in the blood stream.

In experimental animals, it has been estimated that the amount of histamine or other toxins necessary to produce shock could be obtained only by a careful extraction from a mass of muscle greater than the entire weight of the animal, and actually it has been learned that of the major tissues of the body, muscles contain the least histamine.

Transplantation of burned skin exerted no ill effects on the recipient.

Transfusion of blood from burned to unburned animals produced no ill effects.

Extracts of normal skin have been found to be equally as toxic as extracts of burned skin.

Thus while convincing proof of the traumatic toxemia theory is lacking, it has not been entirely disproved.

Practically all observers now agree that the essential pathological change in the circulation in shock is a diminution in the effective circulating blood volume, and that this pathological change may be brought about either by an increase in the size of the vascular bed, that is, a relative decrease in the blood volume, or

*From the Department of Surgery, Medical College of the State of South Carolina.

*Presented before the Greenville Medical Society, October 6th, 1941.

by an actual decrease in the blood volume. Examples of these will be mentioned later.

There is still controversy over the factor or factors which are responsible for initiating this decrease in the effective circulating blood volume. At the present time most observers are now agreed that the loss of whole blood or plasma, or both, from the blood stream, either into the tissues at the site of a local injury, or into a body cavity or externally in the case of gross hemorrhage, are the initiating factors in the decrease in the effective circulating blood volume in practically all cases of so-called secondary or traumatic shock, under the old classification.

It is interesting that as long ago as 1893, Sherrington and Copeland advanced this theory, and since then several others have done likewise. It is further interesting that in support of this theory, most of their reasoning was on the basis of clinical observation. However, it remained for Phemister and Blalock, working independently, to first demonstrate, based on experiment, the importance of the local loss of whole blood or plasma, or both, from the blood stream as a factor in the production of so-called secondary shock. The experiments were merely repetitions of those of Cannon and Bayliss, which purportedly proved the absorption of a toxin from the damaged tissues, except that after traumatizing one of the hind limbs of anaesthetized animals, the hindquarters, rather than merely the hind limbs, were amputated, and the differences in weight observed.

Thus is was found that the differences in weight were quite appreciable, the traumatized side being the heavier by as much as 50% of the weight of the estimated blood volume; that the increases in weight were due to loss of whole blood and fluid (plasma) from the blood stream into the tissues in and around the site of the injury; and that the amount of loss from the blood stream was adequate to cause a sufficient reduction in the blood volume, and thereby the shock resulting with the associated fall in arterial blood pressure.

Since Blalock's and Phemister's original observations, the study of shock by numerous workers has been extensive, and it has been found that many adverse changes in the circulation may follow such a decrease in the blood volume which may lead to shock, and death, if some of the changes which occur are not corrected before they become irreversible. Among the changes are the following:

Accompanying injury there may be a loss of whole blood or plasma or both from the blood stream into the tissues or externally.

Depending on the state of hydration, there may be a shift of the interstitial fluid, then the intracellular fluid via the interstitial, into the blood stream, to compensate for this loss, until the extravascular fluids are depleted or until the osmotic pressure of the plasma is sufficiently lowered so that no more are attracted.

If the loss of fluid continues, oligemia results, that is, there is an actual decrease in the blood volume. This is evidenced experimentally by the fact that the bleeding volume is considerably diminished in an animal in shock.

Accompanying the decrease in blood volume, less blood returns to the heart. In shock the veins are collapsed.

There is therefore a decreased cardiac output, and a diminution in the amount of blood flow.

Hemoconcentration also results when the amount of plasma loss is greater than whole blood loss, as in burns, and there is a resulting increase in viscosity and hence capillary congestion and stasis.

Also accompanying the diminution in circulating blood volume, and the diminished blood flow, there occurs a compensatory vasoconstriction.

Accompanying the above changes, when the loss of fluid from the blood stream is greater than can be compensated for by the shift of the extravascular fluids and vasoconstriction, and possibly other changes, following the decrease in cardiac output, there is a fall in the arterial blood pressure. In the presence of low blood pressure, the characteristic picture of shock or peripheral circulatory failure, exists, and is easily recognizable.

If the changes that may occur and lead to the characteristic condition of shock persist, there results an anoxia of the tissues. If anoxia persists, there results generalized capillary

damage, associated with increased capillary permeability. There is then a further loss of plasma (and protein) from the blood stream, a further increase in the oligemia, and a vicious circle occurs, finally resulting in death.

There are other associated changes which occur in shock, but the importance of some of them is not yet understood.

There occurs a reduction in the serum proteins as a result of the loss of plasma or whole blood. Hypoproteinemia seriously affects adversely the osmotic pressure of the blood.

There are a decrease in the basal metabolism and a decline in body temperature.

Hyperpotassemia occurs presumably as a result of the liberation of potassium on hemolysis of red blood cells, and as a result of impaired viability of other cells, in the presence of anoxia. Hyperpotassemia in itself can cause shock and death, but there are few who believe that it is a primary initiating factor in shock rather than a secondary factor.

Overaction of the adrenal medulla occurs in shock, with secondary overaction of the sympathetic nervous system and hence vasoconstriction. Excessive epinephrine injections may produce shock and death, but the autopsy findings differ in these from those cases of shock resulting from hemorrhage and trauma, and there are few who believe overaction of the adrenal medulla is a primary factor in shock.

The influence of the adrenal cortical hormone in shock is not yet clear.

The search for some tissue metabolite, possibly one of the choline compounds but not histamine, which may be active in shock, continues.

In addition to the loss of blood and plasma from the blood stream as a cause of shock, it is further generally recognized that, in order to account for the various types of shock encountered clinically, there must be other factors which may bring about a decrease in the effective circulating blood volume. For instance, the fall in blood pressure accompanying ordinary syncope must be initiated by a different factor from that causing the fall in blood pressure in the patient with a fracture of the shaft of the femur with extensive damage to the soft tissues of the thigh, or the patient who has had a large external or internal gross hemorrhage.

Thus, Blalock has proposed a new classification of shock, or peripheral circulatory failure, which takes into account different initiating factors which may lead to a reduction in the effective circulating blood volume. The older classification of primary and secondary has been discarded because it has been learned that time is not a deciding factor in the development of shock.

Blalock's classification is as follows:

I Hematogenic Shock
II Neurogenic Shock
III Vasogenic Shock
IV Cardiogenic Shock
V Combinations of the above and possible other unknown types.

Hematogenic shock is that type which follows large hemorrhage, extensive burns, and mechanical damage to tissues, and many other conditions, in any or all of which there is the loss of whole blood or plasma or both. In this type of shock there is an actual diminution in the blood volume. There is a primary decrease in the cardiac output and the fall in blood pressure is secondary. It is exceedingly important to remember that in this type of shock, various adverse changes in the circulation are taking place before the characteristic picture of shock develops. It has been shown by many observers that in the development of shock, the fall in blood pressure is the last change to occur. It must be realized that a preliminary stage, which may be called impending or incipient shock, exists before the characteristic picture associated with low arterial pressure is apparent. Furthermore, it must be remembered that we must learn to recognize this preliminary stage if the shock is to be treated most successfully. Blood pressure determinations alone are a very poor guide to the state of circulation, both during the development of and the recovery from shock. Aside from clinical observation, the more accurate methods of blood volume determination and the presence or absence of hemoconcentration by red blood cell counts, serum and plasma protein determinations, hematocrit readings, and specific gravity de-

terminations of the whole blood and plasma by the falling drop method are already coming into practical use in the diagnosis of incipient shock and hence its most successful treatment. The treatment in this type of shock is obviously restoration of the blood volume with whole blood or one of the blood substitutes. It has already been noted that in this type of shock vasoconstriction occurs as a compensatory measure. Hence vasoconstrictors are not indicated and there has been some evidence produced that their administration may actually do more harm than good.

Neurogenic shock is that type which accompanies syncope or follows a blow on the solar plexus or spinal anaesthesia. In this type, there is no actual decrease in the blood volume but rather a relative decrease due to the dilatation of the vascular bed. There is resultant primary fall in the blood pressure and a secondary fall in the cardiac output. In this type of shock the administration of vasoconstrictors is indicated to correct the primary vascular dilatation.

Vasogenic shock is that type which follows the injection of histamine or other tissue metabolites and as far as is known does not occur clinically. In this type reduction in the blood volume is only relative due to an increase in the size of the vascular bed. The fall in blood pressure is primary and the decrease in the cardiac output is secondary.

Cardiogenic shock is that type which occurs in hematopericardium, pericardial effusion, and constrictive pericarditis. In this type there is a primary decrease in the cardiac output due to the obstruction to the return flow of blood to the heart. The fall in blood pressure is secondary. The treatment is obviously the removal of the obstruction to the return flow of blood to the heart.

SUMMARY

1. Shock or peripheral circulatory failure is defined.

2. The older theories of shock are mentioned, and in particular some of the evidences against the traumatic toxemia theory are enumerated.

3. The theory of the local loss of whole blood or plasma or both as a cause of shock is expounded.

4. The pathologic physiology of the circulation in shock and associated changes are reviewed.

5. Blalock's classification of peripheral circulatory failure is presented.

6. The existence of an impending or incipient stage before the appearance of the characteristic clinical picture of shock is stressed.

7. The treatment of the different types of shock are very briefly commented upon.

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The secretary's office is not merely a cash register. It is essentially a clearing house for information. From individual members of the Association, from local and district societies, from the Council and from the state association, from national medical organizations and the American Medical Association, from the national and state offices of civilian defense, from other medical associations and Journals—from these sources and others information comes to the secretary's office. This information is gathered and digested. It is then sent out to the members of the Association, to other organizations, to local and national medical organizations, to the press, to the committee on Medical Preparedness and to such other individuals or groups who send in their requests.

It is obvious that the secretary's office cannot function as it should without the aid of the members of the Association and of the local county and state officers in assembling this information.

With this in view the secretary submits the follwing suggestions to each member of the Association, asking his fullest cooperation.

PERSONAL DATA

Shortly, questionnaires will be mailed to each member of the Association asking for essential data. The information secured will be of inestimable value to the secretary and will save both time and correspondence. Please fill out the questionnaire the day it is received and return it forthwith.

MILITARY SERVICE

With more and more physicians entering military service it becomes more and more difficult to keep an up-to-date list of our members in the Army and Navy. If you are called into uniform please notify this office at once. Also, give your new mailing address if you desire the Journal sent to you.

MEMBERSHIP CARDS

Upon receipt of his annual dues the secretary will mail a membership card to each physician within forty-eight hours. If you do not receive this membership card within a few days after you pay your dues please see your local county society treasurer or else write directly to this office. Lists of paid members are furnished to the American Medical Association at stated intervals and we are anxious to keep this list up-to-date at all times.

MEDICAL SOCIETY OFFICERS AND DELEGATES

As soon as new officers and delegates are elected their names should be sent to this office at once. This is particularly important at the present time when information comes to this office which must be relayed to county officers immediately. Will all secretaries of county societies please take note and send these names in as soon as the election has taken place.

MEN IN SERVICE

At a recent meeting of the Council a decision was reached to remit all dues of members in good standing upon their entrance into service in the armed forces. During his term of service such a physician will be carried as a regular member of the State Association. In view of this any physician who is called into service should make sure that his dues are paid to date. This will obviate any misunderstanding or hard feelings in the future. This action was made retroactive and will take care of those members now in the service who were members of the Association before they were called.

INFORMATION

Please feel free to call upon the secretary for any information which he might have and which you desire.

JULIAN P. PRICE

Florence, S. C.

THE JOURNAL
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South Carolina Medical Association

EDITOR

Julian P. Price ..... Florence, S. C.

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Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Original manuscripts, subject to approval by the Editor and the Editorial Board, are desired for publication in the Journal. They should be typewritten, double spaced, on 8½ x 11 paper. References should be complete, and only such as relate directly to statements quoted in the paper. Illustrations will be used as funds permit, or as authors are willing to bear the necessary increase in cost. Short original articles are preferred to long reviews.

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JANUARY, 1942

THOUGHTS FOR 1942

"All the darkness in the world cannot put out the light of the smallest candle."

All the greed and hate in the world cannot put out the devotion to service of the lowliest physician.

THE MEDICAL COLLEGE

This issue of the Journal is dedicated to the Medical College of the State of South Carolina.

The great majority of physicians in this state are graduates of this Medical School and those who are alumni of other institutions but who are now living in South Carolina have come to feel that they too are alumni by adoption if not by birth.

It is doubtful whether any institution exists in the state which has rendered more service to the man in the street, the woman in the home, and the baby in the crib, than has the Medical College. Her sons and daughters have gone forth to the remotest part of every county as well as to the larger communities and have there carried on the great traditions of the medical profession.

The Medical College has done much but there is more to be done in the days and years which lie ahead. At no time has the challenge for service been greater than it is now and if the Medical College is to reach that goal toward which it attains it can only be done through the cooperative endeavors of her natural sons and daughters, her adopted children and her friends.

A CALL TO THE MEDICAL PROFESSION

(*Editorial, Jour. Am. Med. Assoc. Dec. 27, 1941.*)

The nation is at war. The Congress has passed an amendment to the Selective Service Act which will call for registration of every man up to the age of 65 and which will place all men under 45 years of age subject to service at the order of the Selective Service boards.

The Procurement and Assignment Service for Physicians, Dentists and Veterinarians was established by order of the President on October 30. Thus the medical profession itself aids in determining proper distribution of the medical profession in supplying the needs of the armed forces and maintaining medical service to civilian communities, public health agencies, industrial plants and other important needs.

At a meeting of the Procurement and Assignment Service held in Chicago at the headquarters of the American Medical Association of December 18, jointly with the Committees on Medical Preparedness of the American Medical Association, the American Dental Association and the American Veterinary Medical Association, plans were drawn for making immediately available to the United States Army and Navy Medical Corps the names of physicians who wish to be enrolled promptly in the service of the government in this emergency.

On the opposite page is published a blank by which every physician may at once place his name with the Procurement and Assignment Service as one who is ready to serve the nation as the need arises. If you wish to make yourself available for classification, fill ou this blank and send it at once to Dr. Sam F. Seeley, Executive Director of the Procurement and Assignment Service. When these blanks are received, they will be classified and checked with the information available in the national roster of physicians at the headquarters of the American Medical Association.

For two thousand and nine counties in the United States, lists have been prepared indicating physicians who are engaged in necessary civilian projects, public health services or educational activities from which they cannot be spared. Shortly the rest of the counties will have such lists available.

In each of the corps areas covering the United States a committee is being established, including representatives of medical, hospital, educational, dental, and veterinary activities. In the individual states, committees of medical, dental and veterinarian professions are being established through which the corps area committees will exercise their functions. In each county also local committees will provide accurate information regarding the status of each member of the profession concerned.

The raising of the Selective Service age from 28 to 45 will place a great number of additional physicians in the category of those on whom the nation may call as their services are needed. Estimates indicate that some sixty thousand physicians thus become available for service and that forty-two thousand dentists under the age of 45 also become subject to call. By enrolling with the Procurement and Assignment Service immediately, utilizing the blank on the opposite page, all physicians, but particularly those under 45 years of age, insure to every extent possible assignment to the type of service for which they are best fitted. They avoid thus also the possibility of unclassified service with the United States Army during the period that may be necessary following selection by the Selective Service before the commission can be secured. A physician called by the Selective Service who has not enrolled or who is not on a reserve list obviously serves without a commission during the time that necessarily elapses before a commission is secured. In future issues of THE JOURNAL announcements will be made regularly of the numbers of those who enroll and of the extent to which the immediate needs of the Army, Navy and other government agencies are being supplied.

ENROLMENT FORM FOR PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS

Dr. Sam F. Seeley, Executive Officer
Procurement and Assignment Service
New Social Security Building
4th and C Street S. W.
Washington, D. C.

Dear Doctor Seeley:

Please enroll my name as a physician ready to give service in the Army or Navy of the United States when needed in the current emergency. I will apply to the Corps Area commander in my area when notified by your office of the desirability of such application.

Signed_____

1. Give your name in full, including your full middle name:

2. The date of your birth:

3. The place of your birth:

4. Are you married or single?

5. Have you any children? If so, how many?

6. Do you believe yourself to be physically fit and able to meet the physical standards for the Army and Navy Medical Corps?

7. Have you filled out previously the questionnaire sent to all physicians by the American Medical Association?

8. When and where were you graduated in medicine?

9. In what state are you licensed to practice?

10. Do you now hold any position which might be considered essential to the maintenance of the civilian medical needs of your community? If so, state these appointments:

11. Have your previously applied for entry into the Army or Navy Medical Service? If so, state when, where and with what result (if rejected, state why).

Date_____

Signature _____

Address _____

SOCIETY REPORTS

The annual meeting of the Medical Society of South Carolina was interrupted by the practice blackout in Charleston, December 16th. However, the shaded windows of the banquet hall, the candles, and the convival spirits made the occasion a most enjoyable one.

At the December meeting of the Greenville County Medical Society, in addition to the election of officers, the Society took action regarding legislation for the inspection of milk and meat sold throughout the county and a recommendation was made to the County Delegation to provide for laws governing this.

The Christmas meeting of the Spartanburg County Medical Society was a gala affair. Following the election of officers the members with their wives and guests from Camp Croft enjoyed a banquet and a dance. There were 120 present.

The semi-annual meeting of the First District Medical Association was held at Walterboro, November 27th. Four papers were presented as follows: **The Physician and Medical Defense** by Dr. J. P. Price, **Differential Diagnosis and Treatment of Arthritis** by Dr. John Boone, **Radiation Therapy of Hemangiomas** by Dr. R. B. Taft, **Surgical Sense and Sensibility** by Dr. LeGrand Guerry.

At the November meeting of the Marlboro County Medical Society officers were elected for the coming year and plans were made for the traditional annual New Year's meeting scheduled for January 7, 1942.

At the December meeting of the Florence County Medical Society the program was devoted to a general discussion of the medical phase of Civilian Defense. In addition to the members of the Society the Chairman of Civilian Defense for Florence and Dillon Counties and the County Medical Directors for Dillon and Horry Counties took part in the Discussion.

NEWLY ELECTED OFFICERS

Columbia Medical Society
- Dr. F. E. Zemp, President
- Dr. George T. McCutchen, Vice President
- Dr. R. B. McNulty, Secretary
- Dr. W. A. Hart, Treasurer

Lexington County Medical Society
- Dr. D. S. Keisler, Leesville, President
- Dr. Karl Able, Leesville, Vice President
- Dr. J. H. Mathias, Lexington, Secretary-Treasurer

Medical Society of South Carolina (Charleston)
- Dr. Francis G. Cain, President
- Dr. Wythe M. Rhett, Vice President
- Dr. Robert Wilson, Jr., Secretary-Treasurer

Pee Dee Medical Society
- Dr. Archie Sasser, Conway, President
- Dr. Howard Stokes, Florence, Secretary-Treasurer

Spartanburg County Medical Society
- Dr. D. L. Smith, Jr., President
- Dr. Howard Walker, Vice President
- Dr. Wm. T. Hendrix, Secretary-Treasurer

Greenville County Medical Society
- Dr. J. Warren White, President
- Dr. J. W. McLean, President-elect
- Dr. Gertrude Holmes, Secretary
- Dr. Thomas Furman, Treasurer

Marlboro County Medical Society
- Dr. J. K. Owens, Bennettsville, President
- Dr. Margaret Buckner, McColl, Vice-President
- Dr. T. H. Smith, Bennettsville, Secretary-Treasurer

Florence County Medical Society
- Dr. John T. Howell, Florence, President
- Dr. W. H. Poston, Pamplico, Vice President
- Dr. Henry Herbert, Florence, Secretary-Treasurer

(Continued on page 25)

MEDICAL DIVISION

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(by districts and counties)

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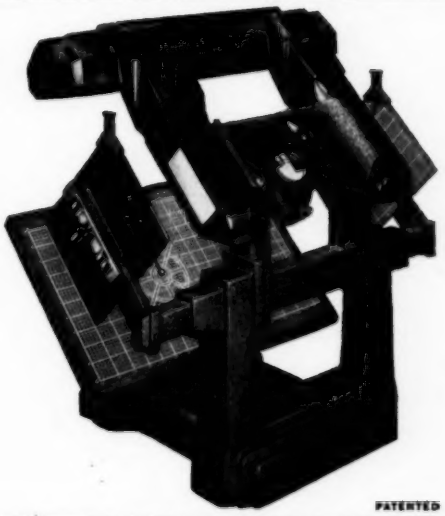

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PRACTITIONER'S PAGE

This page is devoted to the everyday problems of the physician in practice. Members of the Association are urged to suggest subjects for articles which they desire discussed. Members are also urged to submit questions. Each question will be referred to some physician who is qualified to make answer, and if the question involves a subject of general interest, the answer will be printed.

VITAMIN C

Roe E. Remington, Ph.D., D.Sc.
Professor of Nutrition
Medical College of the State of South Carolina

The scurvy-preventive vitamin has been variously called hexuronic acid, cevitamic acid, and ascorbic acid. The name cevitamic has now been abandoned by the American Medical Association in favor of ascorbic, the name given this substance by Dr. C. G. King when he first established its chemical composition.

Chemically vitamin C is a rather unstable substance, being readily oxidized by reagents or by the oxygen of the air. This very instability introduces an element of uncertainty when we attempt to use the values for content of ascorbic acid in foods which are given in books. The several days required for a shipment of lettuce to reach New York from Florida may show a marked decrease in ascorbic acid value. Cooking vegetables for an hour may cause losses as high as 50 per cent, or still greater if soda is added. This cooking loss is party due to leaching into the cooking liquor, since vitamin C is a very soluble substance.

The best food sources are juices of citrus fruits and tomatoes (either fresh or canned, except that canned tomato juice may be inferior to canned tomatoes because in the methods of extraction of the juice before canning, air may be beaten into it), and the young tender leaves and shoots of green plants, eaten raw. A 3 1-2 ounce glass of orange or grapefruit juice will furnish about 2-3 of the daily requirement of an adult, or the entire needs of a pre-school child.

The physiological role of ascorbic acid is in the formation of the cement substance which holds the cells of the tissues together. The symptomatology of scurvy is well known, but there are degrees of vitamin C deficiency less severe than scurvy, which result in impaired vigor, fleeting muscular pains simulating rheumatism, and increased susceptibility to infections. Its relation to dental caries is not fully proved, but there is a definite relationship to the soundness of the teeth and gums. The following have been listed by Sherman (1940) as resulting from shortage of vitamin C. (1) Hemorrhages which may occur anywhere in the body. (2) Profound changes in the structure of the teeth and gums. (3) Changes in the growing ends of the bone with beading and other deformities which formerly were mistaken for rickets. (4) Falling apart of bones due to loss of supporting cartilage. (5) Enlargement of the heart and damage to the heart muscle. (6) Degeneration of muscle fibers generally, causing extreme weakness and even death. (7) Anemia due to destruction of blood-forming cells in the bone marrow and loss of blood by hemorrhage. (8) Loss of calcium through degeneration of the bone matrix, the bones sometimes becoming so soft that they break spontaneously. (9) Degeneration of the sex organs. Experiments with guinea pigs have shown that vitamin C increases resistance to diphtheria toxin, even though the level of vitamin intake was not low enough to produce any signs of scurvy.

The normal ascorbic acid content of blood is about 1 milligram per 100 cubic centimeters, and this value can fall to one-fourth or even lower before symptoms of scurvy appear. To maintain this value requires a continuous intake, since there is continuous urinary loss. The standard daily allowance recommended by the Committee on Nutrition of the National Research Council ranges from 30 milligrams for an infant to 75 milligrams for an adult man, 100 for a pregnant, and 150 for a nursing mother. Cow's milk has been found to contain 15 to 30 milligrams per quart, averaging about 20. Copper catalizes destruction by oxidation, hence use of copper or brass utensils in pasteurizing plants lowers the vitamin value of the milk. Human milk has been reported as

containing from 10 to 100 milligrams per quart, undoubtedly correlated with the dietary supply. Hence even nursing infants require fruit juices or other source to insure a safe supply.

Of the clinical tests that have been published for the detection of vitamin C deficiency, the capillary fragility test is widely used in Sweden. A single test as to the amount of ascorbic acid in blood or urine is not considered as of significant value, reflecting possibly both the dietary intake for the preceding 24 hours and the individual vitamin metabolism of the patient. Since in a state of deficiency blood and tissues take up a greater percentage of an injected or ingested dose, the determination of the percentage of a test dose excreted in a given time (6 hours), or the fasting blood level after four hours, gives valuable information as to the state of ascorbic acid nutrition. Another very simple test that has been proposed consists in the subcutaneous injection of a known quantity of a dye, and observing the time required for its decolorization by the reducing substances of the tissues. Under the conditions laid down, a decolorization time of ten minutes or less is normal, 13 minutes or more indicating deficiency.

AROUND THE STATE

Effort will be made to secure and publish news concerning the activities of individual physicians, and of the various medical societies of the state. Members of the Association, and especially secretaries of county societies, are urged to send in news items to the Editor.

DEATHS

Dr. William Samuel Moore died at his home at Heath Springs December 2nd.

Born at Franklin, N. C., in 1859, the son of a Presbyterian minister, he attended Davidson College and was a graduate of the College of Physicians and Surgeons at New York. He practiced medicine with marked success at Heath Springs from 1898 until a few years ago, when he was forced to retire by failing health.

Doctor Moore was unusually public spirited and gave much of his time and means to whatever he judged good for his community, especially his church, public schools and the improvement of public roads.

He is survived by his widow, the former Miss Emma McIlwaine of Lancaster County, and two daughters, Miss Mary Moore and Miss Albertine Moore.

News has been received of the death of Dr. James Malvern Halsey of Charleston.

NEWLY ELECTED OFFICERS

(Continued from page 16)

Laurens County
- Dr. M. B. Nickles, Laurens, President
- Dr. H. M. Rutledge, Laurens, Vice President
- Dr. J. L. Fennel, Waterloo, Secretary-Treasurer

Chester County
- Dr. J. B. Floyd, Great Falls, President
- Dr. W. J. Henry, Chester, Vice President
- Dr. R. D. Hicks, Secretary-Treasurer

Kershaw County
- Dr. A. M. Brailsford, Camden, President
- Dr. A. B. Whitaker, Camden, Vice President
- Dr. F. G. Shaw, Camden, Secretary-Treasurer

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Pathological Conference, Medical College of the State of South Carolina

KENNETH M. LYNCH, M. D., PROFESSOR OF PATHOLOGY

Case of Dr. L. A. Wilson

ABSTRACT NO. 450

Student F. M. Burdette, Jr. (presenting):

Present Illness: 40 year old negress admitted on 10-22-41 in about the eighth month of pregnancy. During the previous month she had noted considerable edema of the lower extremities and some slight edema of the hands and face. In the course of the last two weeks she had been troubled with a severe and almost constant headache and slight blurring of vision. Had gained considerable weight during this pregnancy, the exact amount of which she did not know. She had not been seen in Obstetrical Clinic.

This was her 12th pregnancy; 6 children living. 4 died in infancy, one miscarriage at 4 mos. cause unknown.

Past History: Following birth of full term child, 1-15-40, she was seized with chills, fever, pain in right side and vomiting after her discharge from the hospital and she was readmitted on 2-3-40. Urinalysis then showed 2 to 4 plus albumin, 20-30 pus cells (catherized), and 30-40 RBC, 2 plus casts. She was given sulfaphyridine and was discharged improved. Kolmer and Kline positive. BP 106/70. At the time of the birth of the child in January, she was told she had "high blood pressure and bad blood" and if she had any more children she would die.

Laboratory:

Urinalysis, 10-22-40.
Cath.
Sp. Gr. 1.008
Reaction Acid
Albumin 4 plus
Sugar 0
Acetone 0
Epith. 0
Pus 0
RBC 0
Casts 1 plus Hyaline
1 plus FG.
WBC 8600
Hb. 9.5 gms.
Polys 71%
Urea N. 15 mg.

Course: Labor induced. Membranes ruptured at 2 P. M., 10-23-40. Delivered spontaneously at 6 P. M. Lost about 1000 cc. of blood and went into shock. Bleeding stopped. Given fluids and improved somewhat, then began bleeding again and lost 500 cc. of blood. Blood pressure unobtainable. Given transfusion and fluid. BP 70/30?; very restless. Gradually grew worse; highest BP recorded after 8 P. M. was 52/40. Expired at 11:28 P. M. on 10-23-40.

Dr. L. A. Wilson, (Conducting): Mr. Allison, what pathology do you think was found in this patient and what sequence of events led to such a state of affairs? In other words, what is your diagnosis?

Student Allison: I think the diagnosis is pre-eclampsia?

Dr. Wilson: How do you explain all the symptoms on this diagnosis and what was the cause of her death?

Student Allison: The hypertension, albuminuria, gain in weight, headache, blurred vision, and edema occurring in the last trimester of pregnancy are all indicative of a pre-eclamptic state. The cause of death was probably post-partum hemorrhage, the exact mechanism of which is uncertain. I do not believe that the hemorrhage would have proven fatal if she had not had the toxemia.

As to the cause of her toxemia, I think that one should attempt to rule out some form of nephritis, or hypertensive cardiovascular disease and I believe that a phenolsulfonphthalein test would have been of aid. I also believe that she had a pyelonephritis during her last pregnancy and that this may have progressed and be the cause of her trouble at present.

Dr. Wilson: What type of toxemia do you think she had?

Student Allison: I think she had that form of pre-eclamptic toxemia where the damage is chiefly in the liver.

Dr. Wilson: Will you hazard a few suggestions as to what was the cause of her hemorrhage?

Student Allison: Atony of the uterus, retained placental tissue, or some form of laceration are the most common causes of post-partum hemorrhage, but we have no clue here as to the exact cause of the bleeding in this case.

Dr. Wilson: Mr. Stokes, do you agree with what has been said?

Student Stokes: Yes, I believe she was suffering from pre-eclamptic toxemia. I think the kidney findings in the last pregnancy are suggestive of pre-eclamptic toxemia also, so she may have had this disease at that time.

Dr. Wilson: Will you classify the various forms of toxemia for us?

Student Stokes: Well, first we have pernicious vomiting of pregnancy which occurs during the

first months. Pyelonephritis is also sometimes included, but should not be classed as toxemia. There is then pre-eclampsia and eclampsia occurring in the latter months of pregnancy. In this case I think we have differentiate from acute glomerulonephritis, also—but there was no retention of Urea Nitrogen which is certainly against it.

Dr. Wilson: Mr. Wright, do you have anything to add?

Student Wright: I agree with what has been said, but will have to admit that I cannot differentiate between chronic glomerulonephritis and a pre-eclamptic toxemia. I think one has to have kidney function tests and an examination of the eye grounds.

Student Burdette: The eye-grounds are recorded as normal.

Dr. Wilson: Mr. Allison, do you consider 1500 cc. an abnormal loss of blood?

Student Allison: Yes, I do. I believe that 500-600 cc. of blood loss is considered the upper limit of normal. I really do believe, however, that she should have lost more blood if we are going to hold the hemorrhage alone responsible for her death. Some laceration of the birth canal or tear of a varicosity may have been the source.

Dr. Wilson: Mr. Stokes, what do you think about inversion or rupture of the uterus as a cause of the shock?

Student Stokes: As regards the former, I think it is a possibility, but would like to have some information as to the height of the fundus. The latter, I think is a very good possibility, particularly of the lower uterine segment. If she had a ruptured uterus, however, I believe it unlikely that she would have gone ahead and delivered as she did.

Dr. Wilson: Yes, that is true. We also have to bear in mind the possibility of rupture into the abdominal cavity. I have found that one of the signs of a ruptured uterus that is most often over looked is a cessation of uterine contractions and labor pains. What about an air-embolism, Mr. Stokes?

Student Stokes: I'm afraid I don't know.

Dr. Wilson: Air-embolism is one of those diagnoses you make when an autopsy is not performed to ascertain the true cause of death. (Laughter).

Student Stokes: In discussing the hemorrhage, one has to remember that she had only 9.5 gm. of hemoglobin to begin with and this definitely has to be considered in evaluating the effect of the blood loss.

Dr. Wilson: Along this line, I would like to ask Dr. Kredel whether he believes that a greater number of hemoglobin determinations would have helped in a better understanding of this case?

Dr. Kredel: That depends a great deal on how the patient was treated. If you combat the hemorrhage by giving a lot of saline and fluids, naturally the hemoglobin will fall, but if you don't, it may take 24 hours for the blood loss to become apparent in the hemoglobin valves.

Dr. Arthur Rivers: I did not hear the entire discussion, but I am under the impression that the statement was made that this woman could not have delivered if she had a ruptured uterus. I just wanted to say that it is possible for a ruptured uterus to ahead and deliver from below.

Dr. Lynch (Demonstrating uterus): This woman had a rupture of the uterus. There was no free blood in the peritoneal cavity. Here in the left broad ligament you see a collection of blood beneath the serous coverings. Internal to this within the wall of the uterus there is a considerable longitudinal rupture which goes through the side of the cervix into the upper uterine segment and measures about 3 inches in length.

In addition there is considerable old scarring of the myocardium, oconvering the origin of which I am not altogether sure. It might be the relic of an old attack of rheumatism. The liver and kidneys did not definitely show any degenerative changes such as we commonly see in these organs in the eclampsia. However, the necropsy was performed two days postmortem; even so one would expect to see more damage. She did have the relic of an old pyelonephritis, which was not marked. What she had for which labor was induced is not apparent from an anatomical standpoint. We can't te'l what the condition was that made her sick. Neither do we know why the uterus ruptured; there is no change present that would account for it. We merely chose to present the anatomical findings as they existed for discussion.

Dr. Wilson: The causes of rupture of the uterus are usually divided into two classes, traumatic and spontaneous. A precipitate labor, such as this might cause extension of a tear up an old laceration into the uterus. Most ruptures are due to putting on forceps, dragging a breech through, or by manual dilatation of the cervix. We also see it in the scar of an old caesarean section and in cases in which pituition is given to hasten labor. This tear re sembles one that is caused by pituitrin, but no such drug was used.

Spontaneous rupture of the uterus is interesting. We had a case recently which ruptured and patient died before anything could be done. Some type of fatty and hyaline change is believed to account for it by some. I wonder if toxemia of pregnancy could not account for such uterine muscle degeneration.

WOMAN'S AUXILIARY

SOUTH CAROLINA MEDICAL ASSOCIATION

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Mrs. Richard M. Pollitzer
Greenville, S. C.

Publicity Secretary
Mrs. W. H. Lyday
Greenville, S. C

MESSAGE FROM PUBLICITY CHAIRMAN

As State Publicity Chairman of the Woman's Auxiliary to the S. C. Medical Association I am making an appeal to each auxiliary president to inform her publicity secretary to please mail all reports, publicity and activities of each auxiliary to your State Publicity Chairman before the eighteenth of the month previous to one of publication.

With an earnest desire to serve in this capacity to the best of my ability, may I urge you to please be prompt.

Thanks.

Mrs. W. H. Lyday,
Publicity Secretary S. C. Medical Auxiliary.

The December meeting of the Greenville County Woman's Auxiliary was held at the home of Mrs. B. C. Bishop. The main address of the occasion was delivered by Dr. Gerta Schwartz who spoke on "The Life of a Doctor in Hungary."

The Auxiliary went on record as endorsing the movement in Greenville County to secure a milk and meat inspection law. It was also decided to buy a Health Bond and to launch a "Better Nutrition" campaign. It was reported that the recent Cancer Control Campaign had contacted at least 2,500 persons.

Mrs. R. M. Pollitzer of Greenville, State President, was the guest speaker at the December meeting of the Spartanburg County Auxiliary which was held at the home of Mrs. William H. Folk. Mrs. Pollitzer discussed "The Importance of Doctors Wives in National Defense."

Mrs. M. A. Phifer, President, also spoke and gave a sketch of Jane Todd Crawford, the first woman to undergo an ovariotomy, which was performed by Dr. Ephraim McDowell in Kentucky in 1809.

Present at the meeting were guests from Greenville and the wives of Army physicians at Camp Croft.

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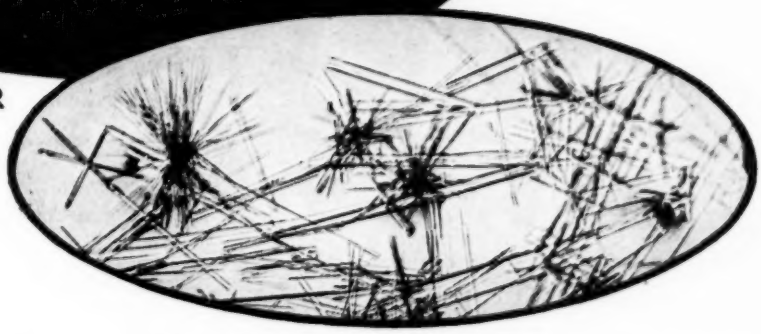

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